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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,911

09/04/2003

Jeffery A. Whiteford

40-003300US

8639

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7590

10/08/2008

QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C.

P O BOX 458

ALAMEDA, CA 94501

EXAMINER

THOMPSON, CAMIE S

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

10/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/656,911

Applicant(s)

WHITEFORD ET AL.

Examiner

Camie S. Thompson

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 6/10/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-39 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-39 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Examiner regrets the early indication of allowable subject matter of claims 19-39 and 42 upon reconsideration, the examiner feels that the record needs additional clarification..
2. Applicant's amendment and accompanying remarks filed June 18, 2008 are acknowledged.
3. Examiner acknowledges cancelled claims 1-18, 40-41 and 43-67.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 19-39 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.
6. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A number of factors must be considered in assessing the enablement of an invention, including the following: the breadth of the claims, the amount of experimentation necessary, the guidance provided in the specification, working examples provided, predictability, and the state of the art. See *In re Wands*, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Circ. 1988).
7. This in this instance, the claims are open to ligands generically that "interact" to "thereby structurally ordering the plurality of nanostructures". The is minimal guidance in the

specification as to what would be necessary to provide this type of interaction and there are no working examples in the disclosure. See Figure 2 for an explanation of how the ligands in invention appear to function.

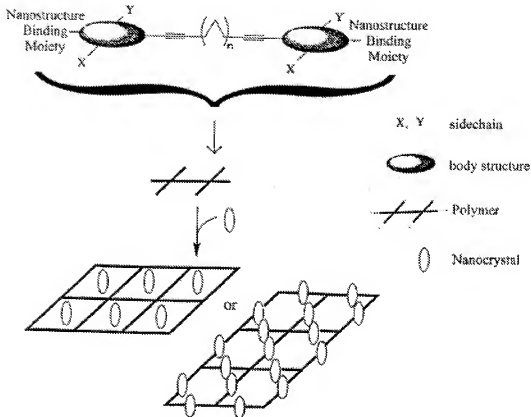


Fig. 2

8. While the applicant list a number of molecules [0095] and show these in figure 3, there is no guidance as to how one would synthesis these materials. Furthermore, once synthesized would function as alleged. These are not simple molecules and their behavior in as self assembling structures would be highly unpredictable. While the applicant cites a number of

references to show how one can construct this particular array, this is not sufficient to show that this has been done or that it will actually work.

9. Molecular interactions are extremely complex and one can not easily predict that an orderly structure as shown in figure 1 or claimed. On its face, the claimed invention appears to be completely theoretical and it would require undue experimentation to make it work.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 19-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As written, the claims recite a composition; however, the claims are a self-assembled film. There is too much structure and order recited for the material to be considered a "composition" per se .

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

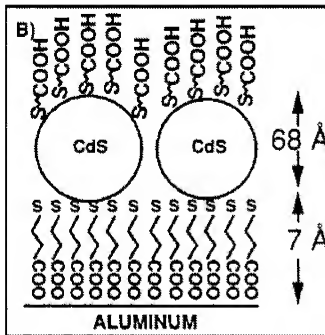
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 19-21, 23-27 and 30-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Colvin et al., *Semiconductor Nanocrystals Covalently Bound to Metal Surfaces with Self-Assembled Monolayers*, J. of American Chemical Society, 1992, 114, 5221-5230.

14. While the claims are rejected under 35 USC as not being enabled, this does not preclude one looking to the art to see what could possibly function in the broadest terms of the applicants' claims. Given the limited guidance, the examiner can only surmise what functions is the claimed capacity.

15. The reference discloses semiconductor nanocrystals such as CdS bound to metal surfaces (see abstract). Additionally, the reference discloses in Figure 1 two different ligands attached to the CdS nanocrystals. The two ligands are $S(CH_2)_2COO$ and $S-COOH$; the examiner takes the position that these ligands will function as claimed. Additionally, adjacent $S-COOH$ ligands on the surface of the two adjacent CdS particles interact with each other, the examiner takes the position that this would aid in "ordering the plurality of nanostructures" as claimed. The structures are non-randomly oriented and aligned on the surface of aluminum. The first and second ligands in the structure are self-organizing molecules.



Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 37-39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieber et al., U.S. Patent Number 7,211,464.

18. Lieber discloses highly ordered nanowire structures wherein the longitudinal axes of the structures are disposed parallel to the surface of a substrate (see column 12, lines 64-68 and column 15, lines 49-68). It is disclosed in column 17, lines 36-60 a plurality of elongated nanostructure clusters wherein at least one of the plurality of elongated nanostructure clusters is dispersed in a matrix so as to align the structure in the direction parallel to the surface of the substrate. Figures 33A and 33B of the reference discloses nanowires that can be crosswires which can be perpendicular to the surface of the substrate. Although the matrix is removed, the reference does disclose that the matrix is induced with a magnetic force in order to stretch the nanostructure clusters in the direction of the surface of the substrate. The reference discloses that the matrix is flexible and stretched along with the nanostructure clusters. It would have been obvious to one of ordinary skill in the art to maintain the nanostructure clusters in the matrix in order to keep the nanostructure cluster aligned on the surface of the substrate since the matrix can be stretched magnetically to the surface of the substrate.

Response to Arguments

19. Applicant's arguments with respect to the present claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (571) 272-1530. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano, can be reached at (571) 272-1515. The fax phone number for the Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. S. T./
Examiner, Art Unit 1794

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794